CLAIMS

1. A method for forming a laminated sheet material from a slurry having a liquid component, said method comprising the steps of:

applying the slurry to a substrate in successive layers to form a wet sheet of predetermined thickness;

applying at least one of the layers by spattering;

removing the wet sheet from the substrate; and

drying or curing the wet sheet so as to remove at least a substantial proportion of the liquid component and thereby forming the sheet material.

2. A method according to claim 1, wherein the slurry is a cementitious slurry formed from a mixture including water, cellulose fibre, silica and cement.

3. A method according to claim 1 or claim 2, incorporating the "Hatschek" process, or a derivative thereof, wherein the substrate takes the form of a porous belt, and the method includes the further steps of:

progressively accumulating the film on a size roller downstream of the belt until a predetermined thickness has been achieved; and

cutting and removing the accumulated material from the size roller to form the wet sheet.

4. A method according to claim 3, wherein the porous belt is formed from a felt material, and the film is deposited at least partially on the belt using a series of sieve cylinders in rolling contact with the belt and substantially immersed in vats containing the slurry.

5. A method according to claim 1, wherein the spattered layer is formed from a material that is substantially different in composition to at least one other layer in the sheet, the composition and position of the spattered layer being selected to confer or optimise predetermined physical properties or performance characteristics in the sheet.

6. A method according to claim 5, wherein the desired properties or characteristics include one or more properties or characteristics selected from a group comprising: enhanced water resistance, fire retardance, tensile or compressive strength, toughness, crack resistance, impact resistance, hardness, density, thickness, thermal insulation, acoustic insulation, nailability, workability, colour and surface texture.

7. A method according to claim 1, wherein the spattered slurry is a cementitious slurry formed from a mixture including silica, cement, and water.

8. A method according to claim 1, wherein the slurry is a self levelling dewaterable cementitious slurry with a solids content of between 50% and around 90%.

9. A method according to claim 8, wherein the slurry includes a dewatering aid in sufficient quantity to permit dewatering of the slurry through the substrate.

10. A method according to claim 1, wherein the spattered layer is applied using a spattering apparatus for applying a slurry to a substrate, the apparatus including:

a delivery surface disposed to support a layer of slurry;

spattering means adapted to be positioned closely adjacent the delivery surface and being moveable so as to spatter the slurry from the delivery surface onto the substrate; and

regulation means for selectively varying or interrupting the flow of slurry from the delivery surface onto the substrate.

11. A method according to claim 10, wherein the substrate takes the form of either the porous belt, or a previously deposited layer of the cementitious slurry.

12. A method according to claims 10 or claim 11, wherein the spattering apparatus further includes a reservoir to contain slurry upstream of the regulation means.

13. A method according to claim 12, wherein the reservoir includes an inlet to direct slurry from a supply source and an outlet associated with the regulation means.

14. A method according to claim 13, wherein the regulation means include a pair of barrier elements selectively movable to define an intermediate clearance space of variable effective cross-sectional flow area, thereby to permit selective regulation of the flow rate of slurry from the reservoir, between the barrier elements, through the outlet, to the delivery surface.

15. A method according to claim 14, wherein the barrier elements are selectively adapted, in a closed configuration, to shut off flow between the reservoir and the delivery surface.

16. A method according to claim 15, wherein one of the barrier elements comprises a first cylindrical roller rotatable about a first axis.

17. A method according to claim 16, wherein another of the barrier elements is a second cylindrical roller rotatable about a second axis, parallel to the first.

18. A method according to claim 17, wherein the first and second rollers are configured to rotate in opposite directions.

19. A method according to claim 18, wherein the first roller takes the form of a delivery drum, an outer surface of which constitutes the delivery surface, and the second roller takes the form of a metering roller selectively movable toward, and away from, the delivery drum.

20. A method according to claim 19, further including a main frame supporting the delivery drum, and a first sub-frame on which the metering roller is mounted, the first sub-frame being rotatable about a third axis parallel to and spaced apart from the second axis, thereby adjustably to displace the metering roller towards, and away from, the delivery drum while maintaining a parallel orientation therebetween.

21. A method according to claim 20, further including first actuation means extending effectively between the main frame and the first sub-frame for adjustably moving the metering roller and the delivery drum toward or away from each other.

22. A method according to claim 21, wherein the first actuation means include a hydraulic or pneumatic cylinder.

23. A method according to claim 10, wherein the spattering means include a plurality of resiliently flexible elongate spattering elements in the form of bristles, extending radially outwardly from a cylindrical body rotatable about a fourth axis.

24. A method according to claim 23, when dependent upon claim 20, wherein the fourth axis is generally parallel to the first, second and third axes.

25. A method according to claim 23 or claim 24, wherein the body and the spattering elements together form a spattering roller.

26. A method according to claim 25, further including a second sub-frame on which the spattering roller is mounted, the second sub-frame being rotatable about a fifth axis substantially parallel to, and spaced apart from, the fourth axis.

27. A method according to claim 26, wherein second actuation means extend effectively between the main frame and the second sub-frame to effect independently adjustable displacement of the spattering roller towards and away from the delivery

drum, so as to permit selective variation or interruption of the spattering process, as part of the regulation means.

28. A method according to claim 27, wherein the second actuation means include a hydraulic or pneumatic cylinder.

29. A method according to claim 19, wherein the spattering apparatus further includes a tank for containing a supply of the slurry and a delivery conduit for delivering the slurry from the tank to the reservoir through the inlet.

30. A method according to claim 29, wherein the reservoir is defined by a tank positioned immediately above the delivery drum and the metering roller.

31. A method according to claim 29, wherein the reservoir comprises a containment region defined between adjacent rollers.

32. A method according to claim 31, wherein the containment region is defined between the delivery drum and an abutting idler roller, with the metering roller being positioned above the delivery roller.

33. A method according to claim 10, incorporating a series of said spattering apparatus' disposed to operate on a common Hatschek machine.

34. A method according to claim 33, including the further step of dewatering the slurry through the sheet, using vacuum boxes positioned downstream of one or more of the spattering apparatus'.

35. A method according to claim 33, wherein each of the spattering apparatus' is configurable to deliver a slurry formulation having a composition that is either the same as or different from the composition of the slurry delivered by other spattering apparatus' in the series, with each formulation corresponding to a desired aesthetic, functional or performance characteristic in the sheet.

36. A method according to claim 33, including the further step of controlling each spattering apparatus in the series so as to deliver single or multiple layers between successive fibre cement laminates.